

UNDERSTAND UPSC

ENVIRONMENT

PRE-CONTEXT

AIR POLLUTION

THE HINDU, PG.NO: 1.

News: "99 cities recorded 'poor' air quality a day after Deepavali".

Commission on Air Quality Management in NCR (CAQM):

- A Statutory body under the **NCR & Adjoining areas Act 2021**.
- This body frames Graded Response Action Plan (**GRAP**).

Graded Response Action Plan (GRAP)

- GRAP is an **emergency response mechanism** based on Delhi's Air Quality Index level.
- Plan is framed as per Supreme Court's order of 2016.
- GRAP is being **implemented by the CAQM**.
- Under GRAP NCR air quality has been classified as **four different stages:** Poor (200-300), Very Poor, Severe Air, Severe+ (450+).

National Clean Air Programme:

- Launched by MoEFCC in 2019.
- **Implementation:** by CPCB under Air (Prevention and control of Pollution) Act 1981.
- **131 Non Attainment Cities:** cities that exceed the NAAQS for 5 consecutive years. They are identified by CPCB.
- Aims to **reduce PM10 and PM2.5 concentrations** to 40% by 2025-26.
- **PRANA** (Portal for Regulation of Air-pollution in Non Attainment Cities) to monitor the implementation of NCAP.

National Ambient Air Quality Standards (NAAQS):

- Air Act 1981 mandated CPCB to set standards for air quality.
- In 1982 CPCB notified standards for pollutants (revised with time).
- SOx, NOx, PM 2.5 & 10, Ozone, Lead, Cobalt, Arsenic, Nickel, Benzene, Benzopyrene, Ammonia.

CPCB:

- **Statutory body** created under Water (Prevention and Control of Pollution) Act 1974.
- Also entrusted with powers and functions under the **Air Act, 1981**.
- Works under **Ministry of Environment, Forest, and Climate Change**.
- Advises Central govt., on water & air pollution.

Powers of Board:

- Has **nationwide jurisdiction** but works in coordination with **State Pollution Control Boards**.
- Advices, coordinates & technical assistance for prevention of water pollution.
- **Amended in 1977:** imposes "**Cess**" on industries.
- Power to **punish, fine & imprisonment**.

Functions:

- Setting standards for notified pollutants under **National Ambient Air Quality Standards** for air quality.
- Sets environment criteria for products under **Ecomark scheme**.
- Monitors the usage of **single-use of plastics**.

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Initiatives by CPCB:

- **Comprehensive Pollution Index:** ranks industrial clusters based on the level of environmental pollution they cause.
- **National Air Quality Monitoring Program (NAMP):** Monitors ambient air quality at various locations across India.
- **National Water Quality Monitoring Program (NWMP):** Monitors water quality at different rivers, lakes and water bodies.
- **Graded Response Action Plan (GRAP):** dealing with severe air pollution levels in the National Capital Region(NCR).
- **National Clean Air Programme (NCAP):** to reduce PM10 & PM 2.5 by 20-30% by 2024.

Note:

- **Ministry of Road Transport and Highways** acts as a nodal agency to **control air pollution from vehicles** under **Motor Vehicle Act 1988**

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PRE-CONTEXT

CONVENTION ON BIOLOGICAL DIVERSITY (COP16)

THE HINDU, PG.NO: 10.

News: "India expects to spend around ₹81,664 crore on biodiversity and conservation from the financial year 2025 to 2030."

Kunming-Montreal Global Biodiversity Framework (KMGBF) 2022:

- **Adopted at COP 15 of CBD in 2022.**
- It replaced **Aichi biodiversity targets**.
- **Non-binding** in nature.
- **KMGBF Targets (major):**
 - **Protect 30% of Land, Water and Sea** by 2030.
 - **Restore 30% of degraded ecosystems** by 2030.
 - **Eliminate harmful subsidies** causing threats to biodiversity.
 - **Reduce invasive species.**
 - Mobilise **at least USD 200 billion per year** to support biodiversity.
- **Global Environment Facility** provides funds under KMGBF.

COP 16:

- Currently on going in **Columbia**.
- **Digital Sequence Information (DSI):**
 - one of the agreements currently being debated by countries in Columbia.
 - Deals with **equitably sharing the benefits from uploading genetic data of organisms** in global databases.

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GS III

SYLLABUS: GOVERNMENT BUDGETING.

CAPITAL EXPENDITURE

THE HINDU, PG.NO: 6.

News: "Core correction".

Trends of Capital Expenditure:

- **1991-2000: Fiscal Consolidation and Reduced Capex.**
 - **Reduction of Capex** from 4% in the early 1990s to approximately 2.5% by the end of the decade.
 - **LPG reforms 1991:** shifted govt. spending pattern.
 - **Government encouraged private sector participation** in infrastructure through models like Build-Operate-Transfer (BOT) etc.
- **2000-2010: Renewed Focus on Infrastructure.**
 - **Recognition of infrastructure bottlenecks,** govt. increased capital expenditure, averaging around 2.8% of GDP.
 - **Significant push towards Public-Private Partnerships (PPPs),** with initiatives like Jawaharlal Nehru National Urban Renewal Mission (JNNURM) etc.
- **2010-2020: Balancing Fiscal Deficit and Growth.**
 - **Global financial crisis of 2008:** capital expenditure faced fluctuations due to fiscal pressures.
 - **Continued investments in infrastructure,** with schemes like the Pradhan Mantri Gram Sadak Yojana (PMGSY) and expansion of rail networks.
 - Capex averaged around 2.8% of GDP during this period.
- **2020-2023: Emphasis on Infrastructure-led Growth:**
 - **Substantial Increase in Capex:** Union Budget 2022-23 allocated ₹7.5 lakh crore for capital expenditure, marking a 35% increase over the previous year.
 - **Budget 2023-24:** The allocation further increased to ₹10 lakh crore, accounting for about 3.3% of GDP.
 - **Budget 2023-24:** 3.4% of GDP (₹11 lakh crore).

Importance of Capital Expenditure:

- **High fiscal multiplier effects.**
- **Economic growth driver:** enhances productivity, reduces costs, improves EoDB.
- **Infra projects are labour intensive,** leading to creation of direct and indirect employment opportunities.
- **Crowding-in Private Investment** eg. PPP models.
- **Reduction in regional disparities:** investing in underdeveloped regions improves connectivity, inclusive growth etc.

Challenges associated with Capital expenditure in budget making:

- **Fiscal constraints:**
 - **FRBM Act** limits the govt. ability to increase the Capex.
 - **Rising Debt Levels:** Eg. Debt levels rose to 90% in 2020-21 from 70% of GDP in 2014.
- **Revenue shortfalls:**
 - **Due to economic slowdown** after COVID 19.
 - **Missed Disinvestment targets:** target of ₹2 lakh crore was set in FY 2020-21, only ₹32,000 crore was realized.
- **Underutilisation of allocated funds:**
 - Ministry of Railways utilised only 70% of its capital outlay — **CAG Reports 2021.**
 - **Environmental clearances** take an average of 600 days in India, compared to the global average of 150 days leading to underutilisation of funds — **World Bank.**

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- **Cost overruns:** approx. Rs. 5 lakh crore and numerous delayed projects span of months to years — **MoSPI report 2023.**
- **Long term financing constraints:**
 - Infrastructure financing needs are estimated at \$1.5 trillion over 2019-2023, but banks are constrained due to asset-liability mismatch, NPAs — **National Infrastructure Pipeline report.**

Union Budget 2024-25 Highlights (Capex):

- **Allocation:** Capex is set at ₹11 lakh crore (3.4% of GDP).
- **Focus Areas:**
- **Transportation:** Significant investments in railways and road infrastructure.
- **Energy Transition:** Allocation for green hydrogen mission and renewable energy projects.
- **Digital Infrastructure:** Investments in 5G services rollout and digital public infrastructure.

Targets:

- **NITI Aayog Estimates:** As per the "Strategy for New India @75" report, India needs to invest around \$4.5 trillion in infrastructure by 2030.
- **Required Capex ratio for Viksit Bharat 2047:** should be around 7-8% of GDP annually (public and private combined).

Initiatives for Development of Infrastructure:

- National Infrastructure Pipeline 2019.
- PM-Gati Shakti National Master Plan 2021.
- National Monetisation Pipeline 2021.
- National Logistics Policy 2022.
- Adoption of Global Best Practices.

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SPACE

PRE-CONTEXT

ANALOG SPACE MISSION

THE HINDU, PG.NO: 5.

News: "India's first analog space mission kick so at Leh in Ladakh."

About Analog Space Mission:

- It is a field test that closely simulates the conditions of the Space environment.
- ISRO launched its **first analog space mission in Leh.**
 - Mission is **designed to simulate extraterrestrial conditions on Mars and the Moon,** enabling India to enhance its human spaceflight capabilities.

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NILGIRI BIOSPHERE RESERVE

THE HINDU, PG.NO: 6.

News: "The Nilgiris as a shared wilderness".

"Charcoal and chalk have been replaced by cameras and pixels, but the urge remains the same. To share, to connect, to preserve."—**relationship between humans and animals in time.**

Nilgiri Biosphere Reserve:

- **First UNESCO-declared biosphere** in India
- Located in southern Western Ghats or at the **confluence of Western Ghats and Eastern Ghats.**
- **Biosphere expands over three States** of Karnataka (KA), Kerala (KL) and Tamil Nadu (TN).
- Largest protected forest in India.

Geographical features in Biosphere Reserve:

- **The iconic Doddabetta**, rising 2,637 metres into the sky.
- **Moyer Gorge** of 260 metre depth.
- **Hill stations** of Ooty, Coonoor and Kotagiri.
- **Grasslands of Shola** (habitat of Nilgiri Tahr).
- **Forests** Shola, Mukurthi, Mudumalai.
- **Endemic flora and fauna:**
 - Baeolepis nervosa (medicinal plant).
 - Nilgiri Tahr (EN).
 - Nilgiri Chilappan- a bird (EN).
 - Star-eyed bush frog (EN).
- **Tribes:** Irula tribe, Toda community.
- **Invasive species:** Lantana camara.
- **Rock art created thousands of years ago** in Sigur and Vellerikombai (depicts celebration of Human Animal relationships).
- **Protected Areas in Nilgiri Biosphere Reserve:**
 - **National Parks:** Nagarhole & Bandipur (in KA), Silent Valley (in KL), Mudumalai & Mukurthi (in TN),
 - **Wildlife Sanctuaries:** Wayanad (in KL), Satyamangalam (in TN).

Note: highest peak in the Western Ghats is **Anamudi**, which is located in Kerala.

Concerns:

- **Tourism:** led to an increase in disposal waste.
- **Colonial-era tea plantations:** Farmers increasingly use heavy pesticides and fertilizers (pollution of water resources).
- **Poaching** in secrecy.

Measures:

- **Promotion of Circular Economy:** by civil societies etc Eg. Clean Coonoor.
- **Empowering indigenous and local communities** for climate resilience.
- **Use of technology:**
 - **To reduce wildlife encounters:** early warning systems through mobile phone-based alerts, cameras, GPS tracking of animals etc.
 - **For conservation of biodiversity:** sensitive cameras, satellite imagery, sensors and AI.
- **Wildlife (Protection) Amendment Act, 2022:** says all wild animals belong to the state. (Seen as responsible governance).

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METHANE (GHG)

THE HINDU, PG.NO: 6.

News: "Zeroing in on methane diplomacy, at COP29."

About Methane:

- **Colourless and odourless gas** at room temperature.
- It is the **primary component of Natural Gas** (making up 70-80%).
- **Source of Methane:**
 - **Natural:** Wetlands, Sea beds, Termites etc.
 - **Anthropogenic:** Agriculture 75%, waste for 15%, energy and industrial processes.
 - Dominance of agriculture, particularly livestock and rice cultivation.
 - **This makes India hesitant** to announce wide methane reduction targets.
- **Uses of Methane:**
 - **Energy source:** fuel, electricity generation.
 - **Industrial Application:** production of Hydrogen, Ammonia, Methanol.
 - **Biogas production.**
- Methane atmospheric concentration is **rising rapidly.**
- **India is the world's third-largest source** of anthropogenic methane emissions after China and the U.S.

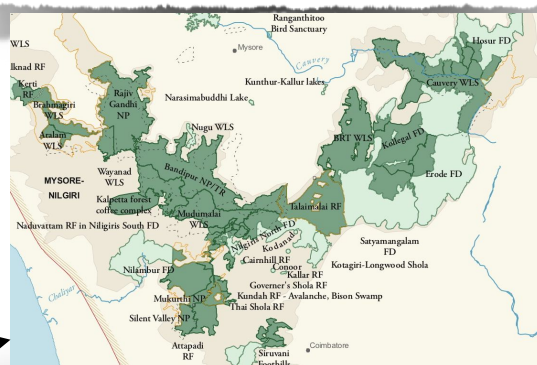
Methane Climate Impacts:

- **Accounting for around 30% of global warming** since the pre-industrial era.
- Radiative Forcing: i.e causing energy imbalance in Earth's atmosphere.
- **Short term impact** 84 times more potent on a 20-year timescale.
- **Long term impact:** on a 100-year timescale, methane has 28 times greater global warming potential than CO2.
- **Fires at waste dumpsites**, can cause significant spikes in air pollution. Eg. two-week fire at Delhi's Bhalswa dumpsite.

Measures taken by India to control Methane emissions:

- **Production fuel for buses with biomethane plants** in Madhya Pradesh through organic waste.
- **Promotion of Galvanising Organic Bio-AgroResources Dhan (GOBARdhan) scheme:** which incentivises cattle waste utilisation and clean energy production in villages.
- **Swachh Bharat Mission-Urban 2.0 programme** to improve solid waste management.
- **National Mission for Sustainable Agriculture (NMSA):** includes methane reduction techniques in rice cultivation.
- **National Livestock Mission:** also promotes practices such as green fodder production, silage making etc.

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UNDERSTAND UPSC

GS II

SYLLABUS: PARLIAMENT & STATE LEGISLATURE: ISSUES ARISING OUT OF THESE.

ANTI DEFECTION LAW

THE HINDU, PG.NO: 4.

News: "Goa Speaker dismisses plea to disqualify eight MLAs who 'defected'."

"First step towards cleaning up public life"—Prime Minister Rajiv Gandhi.

• Anti Defection Law:

- **52nd Amendment Act 1985** added 10th schedule to the Constitution of India to prevent defection by politicians to uphold integrity of institutions.
- **Greater Stability:** Eg. Adds the USA's political stability into the Indian system.
- **Reduces corruption:** Constitutional recognition of political parties.

• Role of Chairman and Speaker:

- **Rule Making power** with defections lies with Speaker/Chairman.
- **Disqualification deciding power:** Speaker or Chairman of Parliament for MPs, Speaker and Chairman of State Legislative Assemblies for MLAs.
- His/her **decisions are final** and cannot be challenged in any court **but are subjected to Judicial Review.**

• Grounds for disqualification:

- **Voluntary give-up** of membership.
- **Abstain** from voting or standing **contrary** to direction issued by party.
- If **independent member** joins political party.
- Nominated member joins political party **after 6 months.**

• Exceptions:

- If **two-thirds of the members of party agreed for a merger**, the disqualification can be avoided.
- If a Person elected to **Speaker** of Lok Sabha or **Chairman** of Rajya Sabha **can voluntarily give up membership** in his party.

• Recent issues:

- **2022:** Maharashtra State Legislature defections.
- **2021:** Calcutta HC gave a 3 month deadline to WB Assembly Speaker on defection.
- **2020:** Supreme Court removed Manipur Minister due to no action from Speaker of Assembly.
- **2017:** Opposition members defected to ruling party and there were made ministers in Andhra Pradesh.

• Political cleansing tool with several lacunae:

- **Curtail Freedom of Conscience:** Eg. Whip doesn't allow to vote against political party.
- **Accountability to party:** rather Representatives (Legislator to Party agent).
- **Compromises the Duty of Legislators:** Decides policies, Bills, Budget etc.
- **Discrimination:** Independent members vs Elected members, former's joining stands disqualified.

Implementation challenges:

- **Sceptical about decision making authority:** Eg. Loksabha Speakers Rabi ray 1991, Shiv raj Patil 1993 expressed doubts on suitability to adjudicate issues of defection by the Speaker.

- **Discretion of speaker in deciding defection cases:** causing delay and allowing defectors to continue holding their positions.
- **Lack of transparency in Issuance of Whips:** kills individual initiative or his/her constituency stance.
- **Bar on Courts interference:** until Speaker makes a decision in the matter.
- **Judicial Activism:** SC in 2020: **Exercised Art.142** & removed Minister in Manipur against whom disqualification petition is pending before speaker since 2017.
- **Constitutional Sin:** Eg: In AP, main opposition members were ministers (2017). If speaker is not acting on defection case, it is violation of constitutional duty—**Rajendra Rana case.**
- **Ambiguities on voluntary give up of membership:** Eg. SC interpreted it as—absence of formal resignation.
- **Voters Behaviour:** Legislators disqualified are being re-elected in by-polls, Eg: KA, MP.

• Suggestions to strengthen ADL:

- **Kihoto Hollohan 1992 case:**
 - Speaker's decision is subjected to judicial review & speaker should function as a tribunal.
- **Decision maker of Disqualification:**
 - **ARC, ECI, Dinesh Goswami & other:** decision making authority should be President/ Governor on the aid & advice of Election Commission of India.
 - **Supreme Court:** call for creation of permanent tribunal headed by retired justices of SC or HC to substitute speaker.
- **Law commission:**
 - **Issuance of whips:** only when government is in grave danger.
 - **Pre poll Election fronts:** should be considered as Political Parties.
- **NCWRC:**
 - **Extension of Defection Period:** minimum 6 years from contesting elections.
 - Strengthening internal party democracy.
- **Defection in other countries:** UK, USA members free to switch sides.

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Thank you!

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